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Content-based retrieval from compressed-image databases

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Abstract

There is an enormous amount of multi-media data including images, video, speech, audio and text, distributed among the various computer nodes on the Internet. The extent to which a user wiU be able to derive useful information from these data depends largely on the ease with which required data can be retrieved from the databases. The share volume of the data also poses a storage constraint on the databases; hence these data will need to exist in the compressed form on the databases. In this paper we concentrate on image data and propose a new paradigm in which a compressed image database can be searched for its contents.

Keywords

image, databases, compressed, content, retrieval

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Content-based Retrieval from Compressed-Image Databases

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In this paradigm, the need for a separate index is obviated by utilising image compression schemes that can support some form of object search in the compressed file domain. The central idea is to store the image in layers of different resolutions and to be able to synthesise an *edge image* from a subset of the layers. This *edge image* then constitutes a model of the image that can be used as a search-able index. The implication of this approach is that the index is inherent in the compressed image file and does not occupy any additional storage space as would be the case in a conventional index.

Edges images are generated by analysing the image candidate into 4 sub-bands using the Daubechies 4-tap wavelet filter. The *LH* and *HL* sub-band images are then summed to synthesise a binary *edge image*. Query images are created by sketching line images that contain aspects of the test images. Results obtained in comparing the query *edge image* with the test *edge images* using the Hausdorff distance are given.

Apart from saving the storage required for the index, the proposed system also supports incremental recall. The preliminary results obtained from the system simulated in our experiments indicate the feasibility of the proposed paradigm.

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